

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-10. (canceled)

11. (New) A detector module for detecting depth-of-interaction of discrete photons, the detector module comprising:

a scintillator array having a plurality of scintillator elements each accessible from a surface of the scintillator array and adapted to produce light upon absorbing a photon;

a photodiode array having a like plurality of photodiode elements each having an active surface disposed parallel to said surface of the scintillator array and optically coupled to a corresponding scintillator element of the scintillator array for receiving said light and producing a respective electrical signal; and

an electronic circuit that is electrically coupled to the photodiode array for receiving and processing said electrical signals;

the scintillator array comprising multiple scintillator elements along each axis of a two-dimensional matrix and being configured so that, in use, an incident photon strikes an edge normal to said surface of the scintillator array and propagates through successive scintillator elements until it is at least partially absorbed thus transferring at least some of its energy to a pixel of the photodiode array and providing depth-of-interaction of the photon.

12. (New) The detector module according to claim 11, further including a carrier for supporting the photodiode array and the electronic circuit.

13. (New) The detector module according to claim 12, wherein the carrier is formed of ceramic material.

14. (New) The detector module according to claim 12, wherein:

the electronic circuit is mounted on the carrier so as to abut a second edge of the scintillator array opposite to the first edge thereof; and

a heat sink is mounted on top of the electronic circuit in thermal contact therewith so that the

„ electronic circuit is sandwiched between the carrier and the heat sink.

15. (New) The detector module according to claim 14, wherein the heat sink is dimensioned so that an upper surface thereof is flush with an upper surface of the scintillator array.

16. (New) The detector module according to claim 11, wherein the discrete photons have substantially identical energies.

17. (New) The detector module according to claim 16, wherein the energy of each discrete photon is substantially 511 keV.

18. (New) A detector assembly comprising at least two stacked detector modules according to claim 12.

19. (New) The detector assembly according to claim 18, wherein a combined thickness of the carrier and the photodiode array is less than a thickness of the

„ scintillator array thereby reducing dead space between adjacent detector modules that is insensitive to incoming photons.

20. (New) A composite detector assembly comprising two or more detector assemblies according to claim 18 juxtaposed so as to produce a larger overall area that is sensitive to photons.

21. (New) A scanner for a tomograph, said scanner comprising a plurality of detector assemblies according to claim 19 juxtaposed edge to edge so as to form a ring structure.

22. (New) The scanner according to claim 21, wherein the detector assemblies are orientated such that a normal through a plane of the scintillator array is collinear with an axis of the ring structure.

23. (New) The scanner according to claim 21, wherein the detector assemblies are orientated such that a normal through a plane of the scintillator array is orthogonal to an axis of the ring structure.

24. (New) The scanner according to claim 21, being configured for PET tomography.